



Evidence-based medicine audit as a tool for improving emergency eye care

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Evidence-based medicine (EBM)

- Conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients
 - Quality care
 - Minimise medical error
 - Equitable provision of services

How much medicine is evidence based?

■ Ellis et al., *Lancet* 1995, **346**, 407-10

■ General medicine

■ 53% interventions based on RCT

■ 29% on reliable observational evidence

■ Other specialties

■ 71% – 97%

■ Ophthalmology

■ Gold standard study carried out in Hong Kong

■ Lai et al., *B J Ophthalmol* 2003, **87**, 385-90

Hong Kong Study

- July 2002

- Tertiary referral centre

- 1.6 million population

- Hawthorne's phenomenon

- Prescribing bias from prior knowledge of the study by the doctors involved

Hong Kong Study

■ Data Collected

- Primary diagnosis & intervention pairs

■ Evaluation

- Medline / Cochrane

■ Levels of evidence

- 1 = Systematic review
- 2 = Meta-analysis
- 3 = RCT
- 4 = Prospective study
- 5 = Retrospective study

Hong Kong Study

- 252 interventions
- 77% of interventions EBM
- 43% Grade 3 or better
- Comparable to other specialties



UK

Evidence-based medicine audit to improve outcomes in eye casualty

North Middlesex University Hospital (NMMUH)

- District General Hospital
- Inner city
- Low socioeconomic catchment

North Middlesex University Hospital (NMMUH)

■ Are we performing to international standards?

■ Can we improve standards?

■ How to measure improvement?

North Middlesex University Hospital (NMUH)

■ Are we performing to international standards?

- Prospective audit
- Year 1 (March 2003)
- Hawthorne's phenomenon

■ Can we improve standards?

■ How to measure improvement?

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■ Can we improve standards?

- Results of year 1 audit compared with Hong Kong Study

- Guidelines issued on management of common conditions

■ How to measure improvement?

North Middlesex University Hospital (NMMUH)

■ Are we performing to international standards?

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■ Can we improve standards?

- Results of year 1 audit compared with Hong Kong Study
- Guidelines issued on management of common conditions

■ How to measure improvement?

- Re-audit in year 2
- March 2004
- Hawthorne's phenomenon

NMUH Eye Casualty Audit

■ Methodology (Year 1 & Year 2)

■ 300 consecutive patients in March

■ Every 3rd patient's notes requested

■ Case notes reviewed

■ Data collected

■ Patient demographics

■ Visit details

■ Visit number

■ Grade of doctor

■ Senior opinion

■ Patient disposal

■ Disease details

■ Symptoms

■ Primary diagnosis

■ Primary intervention

■ Surgical or Medical Rx

NMUH Eye Casualty Audit

Analysis

Primary diagnosis-intervention pairs

- Cochrane database search
- Medline database search
- English papers
- Human studies
- Assigned a level of evidence

1. Systematic review
2. Meta-analysis
3. RCT
4. Prospective study
5. Retrospective study

The screenshot displays the Entrez-PubMed search interface in Microsoft Internet Explorer. The search query is "optic neuritis AND oral steroid". The interface includes a search bar, a "Go" button, and a "Clear" button. Below the search bar, there are tabs for "Limits", "Preview/Index", "History", "Clipboard", and "Details". A list of search results is displayed, including "Use All Fields pull-down menu to specify a field", "Boolean operators AND, OR, NOT must be in upper case", "If search fields tags are used enclose in square brackets, e.g., rubella [ti]", and "Search limits may exclude in process and publisher supplied citations". The interface also features a "Limited to:" section with filters for "All Fields", "Publication Types", "Language", "Human", "Subsets", and "Gender". The bottom of the screenshot shows the Windows taskbar with the start button and several open applications, including Microsoft Excel, NMUH, Microsoft PowerPoint, and Entrez-PubMed.

NMUH Results

■ Year 1 compared to Hong Kong study

Evidence level	Number (%) in 2003 N=80	Number (%) from Hong Kong N= 252
1 Systematic review	6 (8)	26 (10)
2 Meta-analysis	2 (3)	2 (1)
3 Randomised controlled trial	28 (35)	80 (32)
4 Prospective study	9 (11)	34 (14)
5 Retrospective study	12 (15)	52 (21)
Total with levels 1-3	36 (45)	108 (43)
Total with levels 1-5	57 (71)	194 (77)
No evidence	19 (24)	-
Against evidence	4 (5)	-
Total no or against evidence	23 (29)	58 (23)

No significant difference

NMUH Results

■ Locally agreed written guidelines

■ Trauma

■ Cornea

■ Conjunctiva

■ Eyelids

■ Orbital

■ Paediatric Ophthalmology

■ Glaucoma

■ Neuro-ophthalmology

■ Retina

■ Uveitis

NMUH Results

■ Year 2 compared to Year 1

Evidence level	Number (%) in 2003 N=80	Number (%) in 2004 N=82
1 Systematic review	6 (8)	15 (18)
2 Meta-analysis	2 (3)	3 (4)
3 Randomised controlled trial	28 (35)	31 (38)
4 Prospective study	9 (11)	15 (18)
5 Retrospective study	12 (15)	3 (4)
Total with levels 1-3	36 (45)	49 (60)
Total with levels 1-5	57 (71)	67 (82)
No evidence	19 (24)	9 (11)
Against evidence	4 (5)	6 (7)
Total no or against evidence	23 (29)	15 (18)

Significant difference

Evidence-based medicine audit in eye casualty

■ Discussion

■ Year 1

- Comparable to 'gold standard'
- Tertiary care in Hong Kong
- District general hospital in London

■ Year 2

- Written guidelines have a positive effect
- Number of evidence-based interventions increased
- Quality of interventions increased
- Fewer return visits

Evidence-based medicine audit in eye casualty

■ Limitations

- No textbooks
- Medline/Cochrane
- English language papers only
- Reductionist approach
- Poor quality RCT has more value than high quality observational study
- Applicability to junior staff

NMUH Eye Casualty Audit

■ The next steps

■ Continuous departmental audit

■ Personal audit

■ Other specialites

NMUH Eye Casualty Audit

■ Acknowledgement

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